

### Remarks

The non-final Office action mailed March 31, 2009, has been reviewed and carefully considered.

By this amendment, claim 18 has been amended. Claims 1-17, 22, 23 and 27-53 were previously cancelled, and claims 24-26 and 54-59 have been withdrawn. Thus claims 18-21, 24-26 and 54-59 will remain pending after entry of this amendment. Applicants respectfully request reconsideration and withdrawal of all outstanding claim rejections, as well as rejoinder of claims 24-26 and 54-59, in view of the amendments above and the remarks that follow.

### Objection to the Specification

The paragraph beginning at page 18, line 21 has been amended to clarify that reference numerals 400, 402 and 404 are shown in FIG. 10. The first objection to the specification should be withdrawn.

The paragraph beginning on page 18, line 17 has been amended to correct a typographical error. The second objection to the specification should be withdrawn.

### Claims 18 and 19

Claims 18 and 19 stand rejected under 35 U.S.C. §§ 102(e) and 103(a) as allegedly being unpatentable over U.S. Patent Publication No. 2003/0105172 (Bowe).

Amended claim 18 recites, *inter alia*, that “the steam reformer is a panel defining a first face comprising one or more heating channel inlets and a second face comprising one or more heating channel outlets, wherein the length and width of each face is substantially greater than the distance between the faces.” (Emphasis indicates amendment.) As the Specification explains, steam reformers as recited by claim 18 provide, among many advantages, reduced start-up times as compared to conventional steam reformers, such as Bowe discloses.

Moreover, Bowe does not provide for or even suggest a steam reformer as claimed in claim 18, or any equivalent structure. Bowe does not even recognize that such a steam reformer would be desirable. In contrast to claim 18, Applicants understand that Bowe discloses a reactor 40 having a length *or* a width of a face being equal to a flow channel length. For example, Bowe’s reactor 40 comprises “a stack of plates 42 being 200 mm *square* and 3 mm thick (only parts of two plates are shown, in section, in the figure).” Bowe, ¶ [0040], FIG. 4 (emphasis added). Bowe explains further that

Grooves 44 of width 8 mm and depth 2.5 mm extend across *the entire width* of each plate 42 parallel to one side, separated by lands 45 of width 3mm,

the grooves 44 being machined. A carrier foil 46 ... with corrugations 2.5 mm high, locates in each such groove 44. A stack of such plates 42 with the catalyst foils 46 is assembled, *the orientation of the grooves 44 differing by 90° in successive plates 42*, and is covered with a flat top plate .... Thus the gas flow channels are defined by the grooves 44, *one set of channels extending from say right to left in the stack, and the other set of channels (in the alternate plates 42) extending from front to back of the stack.* Id.

Since Bowe's stacked plates 42 are 200 mm square, a length *or* a width of a projected area of one side of a stack of the plates 42 must measure 200 mm regardless of the number of plates 42 in the stack. Moreover, the grooves 44 defining the gas flow channels are understood to be 200 mm long, since the grooves extend across the entire width of each plate. Thus, Bowe's flow channels have the same length as a length *or* a width of a projected area of one side of a stack of the plates 42. Accordingly, Bowe does not provide for "a length *and* width of each face [being] substantially greater than the distance between the faces" as claim 18 recites.

With regard to FIG. 6, Bowe discloses a conventional reactor 60 having gas mixture flow channels formed by corrugated foils 64 and stacked rectangular plates 62. Bowe explains that each of the stacked rectangular plates 62 is 100 mm long and 50 mm wide. Id., ¶ [0046]. It is understood that the "transverse slots" defined by the foils 64 extend the length of the plate 62, i.e., 100 mm, and that a length or a width of an inlet to the "transverse slots" measures 50 mm. Thus, FIG. 6 cannot be relied upon to teach or suggest a reformer wherein the length *and* width of each face is substantially greater than the distance between the faces, as recited by claim 18.

For at least the foregoing reasons, a review of Bowe would not have lead one of ordinary skill to provide a steam reformer as claimed in claim 18. Thus, Bowe alone cannot render claim 18 unpatentable. The rejection to claim 18 should be withdrawn.

Moreover, the apparent taking of Official Notice concerning the fuel cell on page 3 of the outstanding Office action is improper. It is well-settled that Official Notice is only appropriate without citing a prior art reference where the facts asserted to be well known are capable of instant and unquestionable demonstration as being well-known.

Claim 19 depends from and incorporates the features of independent claim 18. Thus, claim 19 must be patentable over Bowe for at least the same reasons as independent claim 18, as well as for the additional features this claim recites.

Applicants note that the allegation on page 3 of the outstanding Office action stating "Bowe teaches ... a smallest dimension of the heating channels [being] less than about 0.05

inch” in connection with claim 19 mischaracterizes Bowe’s disclosure. Instead, Bowe discloses that a thickness of the sheets 50 and 56 measures 0.3mm. Bowe, page 4 ¶ [0044].

#### **Claims 20 and 21**

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Bowe and U.S. Patent Publication No. 2001/0049906 (Shimazu).

Claims 20 and 21 depend from and incorporate the features of independent claim 18. As set forth above, independent claim 18 is patentable over Bowe. Shimazu does not overcome the deficiencies of Bowe with regard to claim 18. Accordingly, claim 18 must be patentable over Bowe and Shimazu. Thus, claims 20 and 21 must also be patentable over Bowe and Shimazu for at least the same reasons as independent claim 18, as well as for the additional features these claims recite.

#### **Claims 24-26 and 54-59**

Claims 24-26 and 54-59 depend either directly or indirectly from independent claim 18. As set forth above, claim 18 is in condition for allowance. Accordingly, claims 24-26 and 54-59 must be patentable for at least the same reasons as independent claim 18 as well as for the features these claims recite. Claims 24-26 and 54-59 should be rejoined.

#### **CONCLUSION**

Although additional arguments concerning the patentability of the claims could have been made, all outstanding rejections have been overcome. Therefore, claims 18-21, 24-26 and 54-59 are in condition for allowance, and such action is earnestly solicited. Please contact the undersigned by telephone if such contact would further the examination of the present application.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

One World Trade Center, Suite 1600  
121 S.W. Salmon Street  
Portland, Oregon 97204  
Telephone: (503) 595-5300  
Facsimile: (503) 595-5301

By /Wayne W. Rupert/  
Wayne Rupert  
Registration No. 34,420